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CLAIMS

1. A method of applying a wear resistant coating material to a surface (22) of a piston ring (1), said method comprising the following steps, application of said coating material by a thermal spray process,
heat treatment of said coating material at an elevated temperature and for a time effective to at least partially diffuse said coating material into the underlying surface, by exposing said material to heating temperature below the melting point of the coating material,
and apply an additional coating material layer (24) subject to successive heat treatments of each said coating material layer (24) in order to lay down on said piston ring surface (22) a plurality of layers (24) of same said coating material.

2. A method according to claim 1, wherein said piston ring (1) is moved relatively to a thermal spray device (3) and a heat treatment device (5) while applying said coating material (4) and heat treatment to said piston ring (1).

3. A method according to any one of claims 1-2, wherein said piston ring (1) is rotated about its axis, in relation to a thermal spray device (3) and a heat treatment device (5), while continuously applying said coating material (4) and heat treatment.

4. A method according to any one of claims 1-3, wherein said heat treatment of said piston ring (1) is provided by induction.

5. A method according to any one of claims 1-4, wherein said resulting piston ring coating has an evenly distributed porosity.

6. A method according to any one of claims 1-5, wherein said resulting piston ring coating has a porosity of between 1 to 15 vol%.

7. A method according to any one of claims 1-6, wherein said resulting piston ring coating comprises open pores (23).

8. A method according to any one of claims 1-7, wherein each of said coating material layer (24) typically has a thickness of between 0.005 to 0.4 mm.

9. A method according to any one of claims 1-8, wherein said coating material is of pulverulent type when fed to said thermal spray process.

10. A method according to any one of claims 1-8, wherein said coating material has a wire-like form when fed to said thermal spray process.

11. A method according to any one of claims 1-10, wherein said heat treatment result in necks (23) in contact points between particles (21) in at least said coating.

12. A method according to any one of claims 1-11, wherein said coating material comprises a metallic compound chosen from a group consisting of $Cr_3C_2$, $Cr_2O_3$ and $Al_2O_3$.

13. A method according to any one of claims 1-12, wherein said coating material is a cermet.

14. A piston ring (1) coated with a wear resistant coating material, by a thermal spray process, characterized in that said wear resistant coating has been exposed to heat treatment of said coating material at an elevated heating temperature below the melting point of the coating material and for a time effective to at least partially diffuse said coating material into underlying surface, and an additionally applied coating material layer (24) subject to successive heat treatments of each said coating material layer in order to provide on said piston ring surface (22) a plurality of layers (24) of same said coating material and wherein said piston ring comprising necks (23) in contact points between particles (21) in at least said wear resistant coating.

15. A piston ring (1) according to claim 14, wherein said piston ring (1) is moved in relation to a thermal spray device (3) and a heat treatment device (5) while applying said coating material (4) and heat treatment to said piston ring (1).

16. A piston ring (1) according to any one of claims 14-15, wherein said piston ring (1) is rotated about its axis while continuously applying said coating material and heat treatment.

17. A piston ring (1) according to any one of claims 14-16, wherein said heat treatment of said piston ring is provided by induction.

18. A piston ring (1) according to any one of claims 14-17, wherein said piston ring coating has an evenly distributed porosity.

19. A piston ring (1) according to any one of claims 14-18, wherein said piston ring coating has a porosity of between 1 to 15 vol%.

20. A piston ring (1) according to any one of claims 14-19, wherein said piston ring coating comprises open pores (23).

21. A piston ring (1) according to any one of claims 14-20, wherein each of said coating material layers (24) typically have a thickness of between 0.005 to 0.4 mm.

22. A piston ring (1) according to any one of claims 14-21, wherein said coating material is of pulverulent type when fed to said thermal spray process.

23. A piston ring (1) according to any one of claims 14-21, wherein said coating material has a wire like form when fed to said thermal spray process.

24. A piston ring (1) according to any one of claims 14-23, wherein said coating material comprises a metallic compound chosen from a group consisting of $Cr_3C_2$, $Cr_2O_3$ and $Al_2O_3$.

25. A piston ring (1) according to any one of claims 14-24, wherein said coating material is a cermet.